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CURRENT LITERATURE.

BOOK REVIEWS.

Experimental morphology.¹

It is with pleasure that we welcome a text-book in this comparatively new field of biology. While embryology is investigating the problem, *how* adult forms are produced, it is the new school of physiological morphology that deals with the question "*why* does an organism develop as it does?" And it is with this question of such great importance to physiologists and morphologists alike that this work occupies itself.

This first part is devoted to those processes which are characteristic of all living protoplasm, and it is quite needless to say that both plants and animals are included in its range.

One of the characteristics of the book is the stress laid upon quantitative measurements of agents and effects. No better opening sentences could have been selected than those of Jaeger and Jevon :

Die morphologische Betrachtung setzt also eine genaue chemische und physikalische Kenntniss 1. des betreffenden Körper selbst und 2. aller der bei seiner Entstehung auf ihn einwirkenden Stoffe und Körper voraus.

"There can be little doubt, indeed, that every science as it progresses will become gradually more and more quantitative."

The book is divided into nine chapters. The first deals with the action of chemical agents upon protoplasm, and it is here especially that the great value of exact quantitative work becomes apparent. The third section, devoted to chemotaxis (chemátropism), is doubtless one of the most attractive in the whole work. Pfeffer's classical experiments are quite fully related.

From the second to the eighth chapters the author treats of the effects of (1) moisture, (2) density of medium, (3) molar agents, (4) gravity, (5) electricity, (6) light, and (7) heat. In general it may be said that a fair historical review is given of the literature on these subjects. In a few cases, it is our opinion that better illustrative experiments could have been chosen. In some cases too much space is given to the Protista, to the exclusion of the Metazoa. This is especially so in the section on stereotaxis (stereotropism), where only a bare reference is made to the stereotaxis of multicellular forms

¹ DAVENPORT, C. B., Experimental morphology, Part I. 8vo. pp. xiv + 280 New York: The Macmillan Company. \$2.60.

Doubtful and perplexing examples of Protista and spermatozoa are presented, while such clear and striking examples as are afforded by the experiments of Dr. Loeb on the moth *Amphipyra* are not mentioned. The same objection holds with still greater force in regard to the chapter on geotaxis.

Another thing which we regret is that in a text-book of biology, which evidently bases all biological phenomena upon the chemistry and physics of the organism and its environment, such metaphysical terms as photophil, photophob, lovers of dark, etc., are used. The same applies to the terms so frequently used, "adaptation," "advantageous to the organism." If by adaptation is meant no more than if we were to say that the photographic plate is adapted to the action of the light, the term is misleading. If, however, by such terms more is understood, it brings physiology back to the realm of metaphysics, a result contrary to the general tendency of the book.

We are glad the author, even at the risk of becoming wearisome to the ordinary reader, goes quite extensively into the physics and chemistry of such subjects as light and solutions. The fuller description of methods will certainly be highly appreciated by the student. Indeed, seeing how much in biological investigation depends upon methods, we could almost wish the author had been still more elaborate in this respect.

In general, the subject matter is well presented. Relatively much space is given to the facts and little to conflicting theories. The style is clear and concise. The bibliography will be of great use to the investigating student. The spirit of the first part is such that we shall look with impatience for the other three parts on growth, cell-division, and differentiation. The author has certainly done a great service to the student of biology in the careful collecting of the numerous researches in the field of experimental morphology, and we doubt not that the book will prove of immense value as a text, and as a stimulus to further and more thorough investigation.—W. D. ZOETHOUT.

Vegetables under glass.

THE last issue of the "Gardencraft Series"² deals with the forcing of vegetables. It is precisely what its subtitle indicates: a manual of the cultivation of vegetables in glass houses. It gives explicit directions for the construction and management of forcing houses, enumerates the vegetables commonly grown or capable of being grown in such houses, and gives detailed instructions for the growing of each. These instructions are based upon results actually worked out by the author and others. While the author is convinced that the forcing of vegetables is "bound to open up great possibilities for the future," he is conservative in advising beginners to undertake

² BAILEY, L. H., *The forcing book; a manual of the cultivation of vegetables in glass houses*. 12mo., pp. xiv+266, figs. 88. New York: The Macmillan Company, 1897.